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ABSTRACT

An informal diagnostic spelling test of Hebrew as a second language was constructed and administered to 30 students, 8 boys and 22 girls, in a Jewish middle and high school. As evidenced by the subjects in this study, spelling errors in Hebrew tended to centralize in four areas: (1) the spelling patterns according to grammatical and phonetic rules, (2) the function words, (3) the stems as representing the morphophonemic level, and (4) the phonetic peculiarities. There is evidence that the subjects of this sample experienced difficulties mostly in the problematic area of similar phonemes represented by different graphemes. The diagnostic test suggested in this paper differentiates and scores spelling errors according to the four criteria mentioned above. The findings of this study provide evidence that the area of stems as representing the morphophonemic level is the most problematic area. Less problematic is the area of function words. The area of patterns of spelling according to rules is the most known area by the subjects of this sample. It appears that this type of error analysis may by efficient for individual diagnosis, as well as for group diagnosis. (Author/AMH)

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Instrument Development for Informal Diagnosis of Hebrew as a Second Language Spelling Miscues

by
Rena Peleg

Submitted in Partial Fulfillment
of the Requirements of the
Master of Education Degree

University of Pittsburgh
School of Education

Language Communications 290
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CHAPTER I

Introduction

Statement of the Problem

The purpose of this study is to develop an instrument for the diagnosis of Hebrew spelling miscues for students who learn Hebrew as a second language at the Hillel Academy of Pittsburgh.

The instrument will be based on current theories of linguistic and psycholinguistic insights that contribute to the understanding of the spelling errors.

It is hoped that the results obtained from this instrument, when administered to individuals or groups of students, will be useful for instructional improvement.

Elements of the Problem

The following research questions are considered:

1. What are the appropriate areas of content that should be included in an instrument for the diagnosis of spelling ability?
2. What are the levels of mastery in the areas of content which contribute to grouping for instructions?
3. How is the Informal Diagnostic Spelling test providing individualized insturctions?
4. What are the desirable attributes for the test developed in terms of validity and reliability?

Significance of the Problem

Spelling is often given a subordinate position or is submerged in the language arts area. In fact, spelling tends to be a "nuisance" subject, in which words are taught pretty much in isolation and with little understanding on the part of the pupil and the importance of the mastery of this tool of communication. For communication to take place,

both sender and receiver must know the code: accurate spelling. A writer's creativity and effectiveness are influenced greatly by spelling ability. Good spellers are able to express their thoughts freely while poor spellers are hampered in their ability to communicate.

Being aware of the frustrations students of middle and high school experience while writing assignments, I realized it is the teacher's responsibility to plan carefully for every individual according to his needs and strengths, a remedial and corrective plan.

Whereas reading difficulties are typically found among slower students and the learning disabled, spelling problems are frequently encountered at all grade levels over the entire range of students' abilities (Simon, 1976).

In attempting to find information about needs and strengths of each individual in the spelling area, I decided to construct a diagnostic informal test. The profile chart of each individual will show his capacities in three areas of spelling in the Hebrew language, emphasizing clearly what his needs are and guidance for group instruction.

It is assumed that:

1. All responses of the graphic display are caused and are not accidental or capricious.

2. What is measured is a general proficiency that shows what an individual is capable of doing now as a result of his cumulative learning experiences.

3. The students have to be acquainted with content of the story before writing it as a dictation; therefore, the story is read to them first.

Limitations of the Problem

1. This study is limited to the development of an instrument for diagnosis of Hebrew spelling errors in a Hebrew as a second language curriculum.

2. The test will not differentiate among grade levels; but rather, it will be oriented toward the goal of achieving accurate spelling.

3. The size of the population and the sample (grades 6, 7, 9, 10, 12) will limit generalization to other groups.

4. Randomization of sample selection was impossible because of the school's classroom structure, and the small sample size.

5. The percentage of unknown words in the test might have an influence on spelling ability.

Definition of Important Terms

1. Grapheme - The minimal significant written unit in a language.

2. Phoneme - The minimal sound unit for distinguishing meaning.

3. Prefix - A meaningful beginning that modifies the meaning of the root word to which it is attached.

4. Suffix - A meaningful ending that modifies the meaning of the root word to which it is attached.

5. Consonants - Sounds characterized by complete or partial stoppage of the air stream.

6. Guttural - Consonants which are pronounced as "ch" as is heard in Swiss German ("nacht, sache, docht").

7. Vowels - The sounds characterized by use of the vocal chords and an absence of any obstruction in the air passage.

8. Vowel Points - Vowel signs which stand regularly under the consonant after which it is to be pronounced.

9. Syntax - An unconsciously held set of rules by which people generate or create sentences.

10. Function Words - Words that are not independent; such as, "as, because, etc." Their structure can not be explained according to rules.

11. Second Language - The language learned after the acquisition of the "mother tongue".

12. Stems - Three consonants on which the meaning essentially depends, while the various modifications of the idea are expressed by changes in the vowels.

13. Word Family - Surface phonetic variations which represent the same meaning, as in English: "fact - factual, grade - gradual".

14. Deep Structure of Spelling - The meaning bearing items which phonetically might look different (according to Carol Chomsky, 1970).

15. Lexical Spelling - The way words are represented in the grammar dictionary, or lexicon (revise - revision).

CHAPTER II

Review of Literature

This review of literature presents the background of the development of an instrument for informal diagnosis of spelling miscues in Hebrew as a second language. The following aspects are related to the preparation of the instrument: the process of spelling; error analysis of spelling miscues; spelling difficulties in a mother tongue v s. spelling difficulties in a second language; the Hebrew spelling system; and the dictation as a diagnostic test.

The Process of Spelling

The nature of the spelling process has been investigated in recent decades primarily in order to improve instruction.

Spelling involves many factors; therefore, there are several ways of characterizing spelling behavior. As concluded by Wallin (1967), the general verbal ability which correlates with spelling includes various skills; such as, knowledge of sounds (phonemes), discrimination of sound (phoneme) analysis, and skills of visual perception in relation to words. The model suggested by Wallin is:

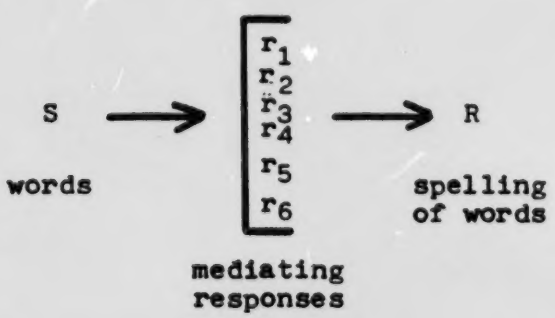


Figure 1: A Model of the Spelling Process

English orthography is often considered a highly inefficient system that fails to represent in a consistent fashion the relationship between graphic symbols and phonetic expression (Baugh, 1957; Albred, 1977). A few linguists, notably Bloomfield (1933), asserted that English orthography was not the irrational graphic tool it was said to be, but that it contains principles whose systematic presentation could benefit the pupil setting about to master the written code. There were several prominent studies on the relationship of speech sound and written words in English. Hanna et al. (1966) conducted an intensive investigation of spelling patterns in over 17,000 words on the relationship between speech sounds and written words. This process, illustrated by Mey (1975), is presented in Figure 2:

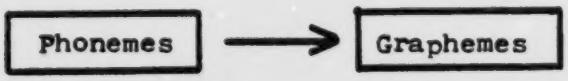


Figure 2: The Hanna et al. Spelling Procedure

The program used by Hanna et al. to simulate phonetic spelling with conditional rules is based on a rule table associated with each phoneme. The rule table for a given phoneme lists a number of different spellings for the phoneme and states the conditions under which each of the spellings is to be used.

Simon (1976) challenges this approach by saying that data and theory give no encouragement to the idea that pupils should learn sophisticated schemes or rules for phoneme transcription. He supports the idea that "Most of the errors that pupils make are not errors that can be corrected by the application of phonemic information. Instead, what is largely lacking is sufficient visual information

about spelling - either in the form of recognition or in direct association - to filter out the errors caused by phonetic ambiguity." (p. 280)

Venezky (1970) and Chomsky and Halle (1968) suggest a more abstract level to describe the spelling process. Venezky's procedure, as demonstrated by Ney (1975), is shown in Figure 3:

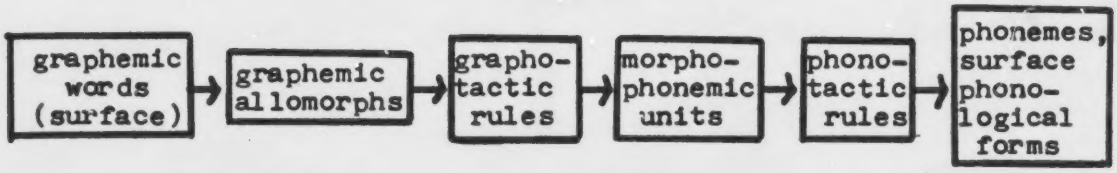


Figure 3: The Venezky Spelling Procedure

Figure 3 shows that surface graphological forms (graphic words) are mapped into surface phonological forms (phonemes) through a series of intermediate stages.

The Chomsky and Halle procedure (illustrated by Ney) is shown in Figure 4:

Figure 4: The Chomsky and Halle Procedure of Spelling

Figure 4 demonstrates that underlying lexical forms are mapped into phonological surface forms on the one hand,

and into graphological surface forms on the other hand.

Using this method, C. Chomsky (1970) explains that phonetic variations (i.e., grade - gradual) are predictable within the phonological system of the language. She states:

> The lexical spelling and the conventional orthography which corresponds so closely to it, abstract away from these variations in pronounciation and represent similarities that have a semantic function in the language . . . Lexical spellings represent the meaning bearing items directly, without introducing phonetic detail irrelevant to their identification. (p. 303)

It appears that these interpretations of the spelling process (Chomsky and Halle; C. Chomsky), different from the phoneme-grapheme patterns of Hanna et al., have specific meaning in the diagnosis of students' disabilities in spelling.

Error Analysis of Spelling Miscues

Examination of a sample of errors in reading, spelling, speech, or math may reveal patterns from which teachers can derive hypotheses about childrens' learning strategies for a particular task. Errors have to be seen as a natural and important part of learning, according to Zuttell (1979), "assuming that spelling attempts are not random, but seem to follow an orderly sequential progression dependent upon the sophistication of the child's abstract phonological system and his ability to integrate other sources of information into an understanding of English orthography." (p. 69) In addition, Goodman (1969) states that by comparing the ways in which miscues differ from the expected responses, we can get insight into how the process is functioning. He suggests an error analysis taxonomy, which although time consuming, the application of the concepts and insight involved provide a diagnostic procedure.

For the same reasons, interest has been directed toward spelling error analysis as a means of developing hierarchical error classification systems. Read (1971), in his studies of preschool and kindergarten writers, found that these young spellers categorized speech sounds in writing according to articulatory properties of the sounds. From his observations Read extracted a number of systematic rules. Common errors included the omission of preconsonantal nasals (i.e., "nubes" for "numbers"; "agry" for "angry") and the phonetic spelling of the past tense marker (i.e., "wokt" for "walked"). However, according to his findings, as children are exposed to reading and phonetic instruction in school, their hypothesis become more abstract. They begin to generalize from the rules intuited through their reading environment (i.e., "whater" for "water"). Referring to a similar age group of children, Carol Chomsky (1976) states that children are ready to write before they are ready to read. She advises that reading instructions should be an outgrowth of abilities children develop through inventing their own spelling of words.

In comparing patterns of miscues in reading and in writing, Ney (1975) concluded that the miscue of addition and substitution of entire words are more frequent in reading, while the miscues of omission are more frequent in writing.

The comparison between the reading process and the writing process is an issue which will not be discussed in this paper, but important comments made by Peters (1967) regarding the way we test reading and spelling will add to the aspect of diagnosis tests in spelling. She states:

> To test spelling in the way one tests reading by a word reading test, ten to a year progressively, is irrational. There is, however, a case for making attainment tests in spelling, predictive tests (at the pre-spelling stage), diagnostic tests, and classification tests. (p. 85)

She suggests the following scale to grade spelling: careless, casual, adequate, careful, and pedantic.

Burt's (1947) classification of types of errors is seen by Arvidson (1960) as a good starting point to a diagnostic approach. He mentions four categories: lapses, which are careless mistakes not likely to be repeated; extemporization, which is the result of an attempt to make up the spelling of an unknown word by generalization from phonic or other principles; habitual errors, which are mistakes done over and over again with the same word; and idiosyncracy, which is a characteristic type of error that is repeated in different forms or in different words (i.e., reversing of letters).

Specific categorization of spelling miscues were suggested in different studies done in the spelling area. Some of them will be mentioned in this paper, according to their attribution to the error classification chosen for this study.

A study done by Holmes and Peper (1977) examined whether significant differences could be observed in the types of errors made by normal versus retarded readers of the fifth grade level. Each error made by each child was assigned to one of these nine categories, referred by Berdiansky, Cronell, and Koehler (1969):

1. PA - phonetically acceptable (e.g., "lite" for "light").

2. VD - vowel deletion (e.g., "reasnable" for "reasonable").

3. VS and VA - vowel substitution and vowel addition (e.g., "orader" for "order").

4. CD - consonant deletion (e.g., "supise" for "surprise").

5. CS - consonant substitution (e.g., "citchen" for "kitchen").

6. CA - consonant addition (e.g., "egel" for "edge").

7. PPO - incomplete processing (e.g., "crewn" for "grown").

8. RLO and LD - reversals of letter order and letter doubling (e.g., "reslut" for "result").

9. Garble - This category included all errors which could not be classified in any of the earlier categories. The data from the study suggested that retarded readers make a high number of all types of errors in spelling. Thus, their pattern of errors, as defined by proportions of error types, does not differ from normal readers, even though their overall incidence of errors is higher.

Zuttell (1979), in his study "Spelling Strategies of Primary School Children and Their Relationship to Piaget's Concept of Decentration", selected five word categories. Three of them were adopted from Read (1971): lax vowel, tense vowel, and morphological marker. Two additional categories were constructed by the investigator: consonant doubling and vowel extention. The results of this study indicate that as the grade level increased, the children seemed to use more sophisticated spelling strategies. In addition to that, it was found that the lax and tense vowel categories seemed of comparable difficulty, while the tense marker and consonant doubling categories were equally difficult, though noticably more difficult than the first two categories.

Patterns of spelling miscues were organized by Marino (1979) in three wide categories. Marino assumes that the spelling process may be seen as incorporating linguistic knowledge at three levels: the phonetic level (i.e., cueing on formation of speech sounds), the graphemic level (i.e., cueing on writing system characteristics), and the morphophonemic level (i.e., cueing on an abstract underlying lexical representation) The phonetic judgements, based on place of articulation, may be considered a primitive effort to understand the abstract nature of the

English writing system (e.g., "prevented" - omission of 'n'; "attractive" - substitution of 'ch'; "detective" - substitution of 'a'). The graphemic level is an intermediate level which comprises those rules or generalizations inherent in the orthography. The graphemic level includes knowledge of phoneme-grapheme correspondences, and knowledge of the constraints within which those correspondences operate (e.g., "omitting" - omission of 't'; "providing" - addition of 'e' before 'ing'). The morphophonemic understanding may be viewed as an advanced stage of cognitive functioning.(e.g., "magic" → "magician" substitution of 'sh' or 'ch' for 'c'; "province" → "provincial" - substitution of 'sh' or 'ch' for 'c').

In this study Marino examined children's spelling errors to determine the relationship between the previously mentioned linguistic cues. The subjects, 66 second, third, and fourth grade students, took a 45 item spelling test containing 15 chances at each of the three linguistic levels. Within each grade, morphophonemic structures yielded significantly more errors than graphemic structures; graphemic structures yielded significantly more errors than phonetic structures.

In addition to the studies mentioned above, Ganshow (1981) reports an informal experiment conducted with in-service elementary teachers. They were to spell 10 difficult and infrequently used words like "mnemonic" and "chamois" and then to describe what techniques they used. Observing themselves as spellers, teachers found that they had used a number of strategies. For example, "I thought of 'pneumonia' so I started 'mnemonic' with 'pn'." (p. 679) Ganshow recommends the following steps in a diagnostic/prescriptive approach to spelling using error pattern analysis:

1. Error collection (usually at least 25 examples)

a) Error Pattern	vs. b) Correct Pattern
"nashun"	"nation"
"desizhun"	"decision"
"rashunul"	"rational"

2. Erroneous Strategy
   a) Teacher's view of why student erred (e.g., applied a phonics rule).
   b) Student's view of why student erred (e.g., it sounds right).
3. Correction Strategy;
   a) Teach 'sion' and 'tion' as suffixes.
   b) Provide a root word and suffix.
   c) Show other words ending with 'sion' and 'tion'.

In summary, many practical hints from the above mentioned studies were adopted in the development of the error analysis used in this study. Marino's study was found to be very useful for the organization of categories, applying her conceptual framework to the Hebrew language. Some of the categories mentioned by the study of Holmes and Peper and by Zuttell's study were adopted according to the patterns of the Hebrew language. The approach of error analysis, as well as the various systems used for analyzing spelling errors, were the guidelines to the error analysis used in this test.

Spelling Difficulties in a Mother Tongue vs. Spelling Difficulties in a Second Language

Four common causes of spelling difficulties in a mother tongue are mentioned by Durrell (1980):

1. Inability to spell phonetically; evidenced by the omission of essential sounds and by the addition of sounds, or by the use of incorrect letters for the sounds in words.
2. Inability to recall the correct visual form of the word; usually indicated by the correct spelling of phonetic words, but incorrect spelling of non-phonetic word elements.
3. Slow handwriting; when the child writes so slowly that he or she forgets the remainder of the word.
4. Lack of understanding of word meaning so that errors occur with words that are unfamiliar to the child.

Starting with the phonetic element, it is interesting to note that researchers suggested, as mentioned by Holmes and Peper (1977), that retarded readers are more likely to produce mispellings that bear little phonetic resemblance to the stimulus word (Boder, 1970). Other researchers suggested that retarded readers are more likely to make errors in which there are reversals (e.g., "reslut" for "result").

Letter reversals and difficulty in translating sounds into letter symbols, resulting in mispellings that lacked good phonetic components, are a typical problem associated with dyslexia. In a study done by Frauenheim (1978) in which he reports the skill atainment for a group of 40 adult males who were diagnosed as dyslexic in childhood, the spelling area was the most seriously impaired area of academic functioning. Boder (1970) has claimed that analysis of spelling error types reveals three classes of retarded readers: dysphonetic (children who make nonphonetic, unintelligible errors), dyseidentic (children who make phonetically acceptable errors but do not respond to words as "wholes"), and alexic (children who are deficient both in phonetic skills and in their ability to perceive words as "wholes"). Holmes and Peper (1977) challange this assumption, by analyzing the spelling errors of two groups of fifth graders. Their conclusion was that the proportion of error's pattern is virtually identical for both normal and retarded readers. Retarded readers were thus shown to be unlike normal readers in the number of errors committed, but like normal readers in the types of errors committed.

Another problem in spelling is the inability of students to spell words that violate phonetic principles. As Albred (1977) states, investigation indicates that the major process by which a child learns words not spelled phonetically is by visualizing those words as they have been seen, or as they resemble other words.

The skill of retrievability of the image, which is probably a particular form of looking, quite distinct from any specific sensory ability, a visual perception of word form which can be acquired subconsciously or peripherally, is seen by several investigators as the main skill in spelling (Peters, 1967; Hebb, 1968; Templeton, 1979). They believe that training can help to retrieve the image. Templeton (1979), in his study of good spellers and the relationship between orthogr phic and phonological knowledge, concludes that seeing a word, as opposed to hearing it, seems to provide a more direct link with the appropriate phonological rules that apply to derivatives of the word.

The internalization of the code, is viewed as "learning of letter strings that occur as a result of the conventions in the writing patterns of a particular language. There is a certainty that some letters can occur and that some cannot" (Peters, 1974). An "Individualized Multisensory Spelling Program" conducted at Garfield Elementary School, Washington, during 1972-73 by Hill and Martinis (1973) utilized the visual-kinesthetic-tactile modes of instruction. The experimental group, a sample with unspecified learning disabilities, had a marked increase in the total number of words learned during the program, and displayed an 84 percent retention after three weeks (Hill, 1973).

It would be, therefore, impossible to state that spelling depends upon a specific cognitive functioning. Spelling probably involves different combinations of functions. In addition to these factors, a Second Language Spelling investigation has to take into consideration the following: the errors represent a multi-dimensional arrangement of the native and target languages in the learner's mind.

Faulty production may be due to:

1. The intrinsic complexity of a given target language item.

2. The degree of exposure the student had has to the item in the target language (Ludwig, 1979).

3. Hypotheses drawn on the basis of the mother tongue, or other languages known, result in errors that are clearly based on interlingual considerations (Mace-Matluck, 1979).

Thus, researchers look upon errors as the primary index or source of observable data for the assessment of a learner's developing first and second language system.

In summary it can be stated that in analyzing second language spelling errors, the examiner has to be aware and look first for reasons that cause faulty production, specifically in a second language. A deeper investigation into the reasons of spelling errors in a second language will utilize the information available from research in mother tongue spelling miscues.

The Hebrew Spelling System

An examination of certain aspects in the Hebrew phonology and spelling system is needed in order to apply the theoretical linguistic and psycholinguistic views mentioned in "The English Spelling System" to the Hebrew language. The second language learner, learning the written form of the Hebrew hanguage, is confronted with several characteristics which are very different from the English language. Some of the difficulties for the second language learner of Hebrew are the direction of the writing, the Hebrew alphabet and vowel system, the pronounciation, the system of stems, and the different grapheme representation of similar phonemes.

First of all, the direction of writing and reading in Hebrew is from right to left. According to Linksz (1973) there were good historical reasons, as well as biological reasons, to support the choice of this direction. When carving on stone tablets with hammer and chisel, one must hold the hammer in the right hand (in most of the cases the hand of aggression) and go from right to left. The question in relation to the different directions of script,

is if students of Hebrew as a second language in the U.S. are inhibited by the change of directions. The answer to this question is beyond the limits of this study.

A conflict for the second language learner might be the Hebrew alphabet and vowel system. Like all semitic languages, Hebrew is a consonantal language. That is, the basal meaning is inherent in the consonants, while the vowel changes merely serve to signify grammatical modifications. The vowel system which was added to the alphabet during the 6th century is used in books for beginning readers, or in the study of the Bible, the Talmud, or the Mishna. In writing the vowel marks are not used. Orbach (1967) points to one of the outcomes of this fact to be a lesser redundancy than in the spelling of English; and therefore, the Hebrew word has to be identified from contextual cues. In comparing the Hebrew alphabet to the English one, Orbach finds that:

> Upper segments of the letters (in Hebrew) are, for the most part, a heavy horizontal stroke. Ten of twenty-two letters in the Hebrew alphabet cannot be differentiated from each other on the basis of the upper segments of the letters:
>
> ת ר כ ס ה ד ב
> T R K S H D B
>
> Similarly with another four:
>
> ג י ו נ
> G I W N
>
> There are only two letters which are structurally unique and differentiable from the rest and these are:
>
> ל and ק
> L Q (p. 133)

Furthermore, some sounds are represented by structurally identical symbols except for the placement of a

dot, which is omitted in writing and in adult reading material:

בּ-ב פּ-פ כּ-כ

B - B P - P K - K

The final letters are another area of difficulty in the alphabetic system. Five sounds, namely K, M, N, F, and S, when written as the final letters of words, have to be written in another way than when written in the beginning or middle of the word (Appendix B).

The pronounciation of the Hebrew language might cause problems for English speakers in such areas as the vowel sounds, the guttorals, the "s" sounds, etc. The vowels' pronounciation in Hebrew is much more stable than in English. As Rieger (1953) states, "Their (the English speakers) main problem is to develop a more energetic lip movement." (p. 49) The guttorals, as well as the "s" consonant, are typical sounds in semitic languages (Appendix F), and might cause phonetic difficulties for English speakers.

The system of stems, which is the "deep structure" of the Hebrew language, is a difficult area not only for English speakers, but for Hebrew speakers as well. The word stems are almost invariably triliteral, and carry the basal meaning. The various semantic variations and modifications, as well as the differences in person, number, and gender are indicated by mere changes of vowels or by addition of prefixes and suffixes (Appendix C). A similar linguistic phenomena in English is mentioned by Carol Chomsky (1970):

medicate - medicine,
critical - criticize,
sagacity - sage,
grade - gradual. (p. 301-2)

Finally, the most frequent area of confusion for students (second language learners as well as Hebrew speakers) in the Hebrew spelling system, is the area of different grapheme representation of similar phonemes. This phenomena

is known as the pronounciation shifts that occur as a language changes over time. As mentioned by C. Chomsky (1970), the "deep structure" in presentation is highly resistent to historical changes, and remains the same over long periods of time. This problem is obvious in Hebrew in 13 phonemes:

Hebrew Letters	א	ע	ו	ב	כ	ח	ת	ט	ק	כ	ס	ש
Transcript	a	a	w	b	k	h	t	t	q	k	s	š
Sounds	A		V		CH		T		K		S	

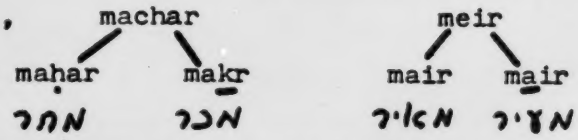
The "A" sound and the "CH" sound are connected with the primary language of the speakers of Hebrew. The variety of a, h, and k came originally from countries which before World War I belonged to the Ottoman Empire, including Palestine. Their primary language was some dialect of spoken Arabic and/or Ladino (Judeao-Spanish). Speakers of a variety of languages immigrated from Eastern or Central Europe and their primary language was generally some dialect of Yiddish and/or European language. These two main streams of immigration have brought about two different systems of pronounciation of the Hebrew written scripts.

These two systems of pronounciation became the center of a conflict. Tene (1969) reports about the decision which was made after the so called "War of Languages":

> Yellin (1905) supported the introduction of the pronounciation called 'Oriental' or 'Sephardic'. . . In 1913 Yellin convinced the Hebrew Language committee to adopt his position, which was grosso modo, the pronounciation of Hebrew graphemes according to the pronounciation of the equivalent graphemes in Arabic except for (ו) W, (פ) F, and (ס) S. The committee assumed this was the Hebrew pronounciation before Hebrew ceased to be a spoken language. (p. 43)

But the natural development of pronounciation, in Hebrew native speakers of the second generation, did not adopt the "Sephardic" pronounciation as a whole, the result

being a problem of similar phonemes which are spelled differently; e.g.,



This linguistic phenomena is seen as a loss of a prominent semitic feature (Tene, 1969).

Another semitic feature was the opposition between articulation by pushing back the mass of the tongue towards the rear wall of the pharynx, and articulation without that movement. The loss of this feature caused the loss of distinction in the phonemes ṭ (ט) and t (ת), and between q (ק) and k (כ) (Tene, 1969). Distinction between s (ס) and š (ש) is a more ancient one, already found in the Mishna. As a result both systems of pronounciation still exist today.

As a result of all the confusion a reform in the spelling system by Latinizing the alphabet and by deciding on a higher phoneme-grapheme correspondance came about. Opposed to these requests is the research of linguists and psycholinguists in the structure of the language. Using their studies in spelling instructions might be of help in students' acquisition of the Hebrew spelling system.

In conclusion, the Hebrew system of spelling might cause certain difficulties for students of Hebrew as a second language in the U.S. The phoneme-grapheme correspondance is not a perfect one as a result of the Hebrew language characteristics mentioned in this chapter. These students might experience difficulties in spelling of Hebrew words as a result of the change in the direction of writing, the peculiarities of the Hebrew alphabet and vowel system, specific pronounciation problems, the system of stems, and the different graphemes representing similar phonemes.

The Dictation: A Test in a Foreign Language

Learning a second language is seen as a process of adaptation or extension of existing skills and knowledge,

rather than the relearning of a completely new set of skills (Corder, 1973). Each language is a unique system of communication which uses a limited number of the possible arrangements of its phonemes, morphemes, words, etc. A further distinction made by Lado (1961) is:

> The fact that by comparing the linguistic structures of the native and the foreign languages we can predict the learning problems of our students seems to prove that the assumption of transfer of the native language habit patterns is at least substantially correct.

One of the factors of individual differences that has appeared most clearly and consistently in factor analysis studies of psychological tests, as reported by Carroll (1968), is the verbal knowledge factor. To a large extent this probably represents general linguistic competence, in that it measures the extent to which the individual has acquired the more sophisticated grammatical features of his native tongue.

The dictation as a test of spelling achievement is an old type of procedure. There seem to be two opposite approaches to the dictation. Lado (1964) points out that:

> Techniques used to test writing in the native language can often be used in the foreign language as well . . . On critical inspection it (the dictation) appears to measure very little of language. Since the order of words is given by the examiner as he reads the m terial, it does not test word order . . . it does not test vocabulary. It hardly tests aural perception of the examiner's pronounciation because the words can be identified by context if the student does not hear the sound correctly . . . Spelling, and a few matters of inflection and punctuation, can be tested through dictation, but the complicated apparatus of dictation is not required to test these matters. Simpler techniques can be substituted. (p. 34)

In contrast to this opinion, Smith (1980) writes an article titled "New Potential for the Old Dictation". He emphasizes the correction of the dictation by the students themselves, in order to acquire the habit and skill of

asking themselves the differences between the sounds of the letters they wrote and their correction. "Students need not stop at the mere correction of an error. Instead of noting a single error, they can possibly come to some conclusions regarding a general tendency that might be problematic." (Smith, 1980, p. 403) Balette (1967) also indicates that such tests, used with intermediate and advanced students, offer the most reliable and most valid measure of the student's skill. In order to make sure that the test makes valid comparisons between the performance of different classes or of the same student on different occasions, a certain technique is suggested by Balette:

> First, the whole passage is read at normal speed. Then the passage is read a phrase at a time with pauses during which the students write down what they have heard. At this time the teacher may read each phrase either once or twice. (p. 740)

The dictation as a diagnostic tool aids in error analysis. Analysis of errors in a second language is viewed by experts as a necessary technique which enables teachers to diagnose students' language learning needs. Ludwig (1979) discusses the use of error analysis as an outcome of the cognitive approach which stems from the findings of cognitive psychology and generative transformational linguistics. The cognitive oriented researcher looks upon error as the primary index, a source of observable data for the assessment of a learner's developing first or second language system.

A global analysis of errors in a second language is presented by Hendrickson (1979). The orthographic subcategory consists of the addition, omission, substitution, rearrangement, or malformation of one or more letters in any lexical, syntactic, or morphological form or structure. A diagnostic error chart is designed in order to help the teacher pinpoint the areas in which errors are particularly

persistent; and to help individualizing instructional materials. Learning materials developed for one student's need could be used by another student who experiences similar dificiencies. The error chart can help teachers decide which student's error to correct immediately and which to tolerate temporarily. Tallying the problem areas of all students on a master diagnostic error chart would reveal small and large clusters of errors.

In conclusion, it seems that the dictation can be a useful technique and a valid measure of the student's spelling ability.

Summary

The literature related to the development of an instrument for informal diagnosis of spelling miscues in Hebrew as a second language can be summarized by several conclusions. First, the spelling process is viewed as a complex process involving abstract levels of perceiving underlying lexical forms. The analysis of samples of errors reveals patterns which are not random, but represent steps in the student's internalization of the coding system. By organizing these patterns according to certain criterions, the teacher will be able to recognize strengths and weaknesses of each individual, and to decide on instructions for needs in specific areas. In analyzing spelling errors, the examiner has to be aware of the circumstances and individual background, as well as difficulties which are specific to Hebrew as a second language.

CHAPTER III

Design of the Study

Construction of the Test

Constructing an informal classroom test of production involves the preparation of a list of problems, selection of words and phrases that contain the problems, preparation of items, and giving the test to individuals or to groups and scoring it (Lado, 1964). This procedure was followed in the construction of the Informal Diagnostic Spelling test.

List of Production Problems

The following 13 problematic graphemes were chosen as the target letters in the target words:

a - ā - (h)
k - ḥ
s - ṣ
t - ṭ
b - w
k - q

The target words were divided, according to the definition of the spelling process, incorporating linguistic knowledge at three levels (Marino, 1979). The three categories are:

1. Patterns of suffixes and prefixes according to grammatical and phonetic rules.
2. The dependent function words.
3. The morphophonemic structure of the language represented by stems.

Writing the Test

The form of the Diagnostic Spelling test constructed in this study is a story of 338 words, administered as a dictation. This method is similar to the one used in the

A.C.E.R. Spelling Test (Buros, 1959) which uses sentences dictated to students. Richardson recommended this procedure in his review of the A.C.E.R. test (Buros, 1959, p.368) for the following reasons: "This seems to the reviewer to be on the whole a better method of testing spelling than the more usual one where the examiner dictates each successive word in the list, uses it in an illustrative sentence, and then repeats the word. The first method (the dictation of whole sentences) is more closely related to the practical situation of composition or letter writing." Other reviewers of spelling tests (Rinsland in Buros, 1959, p. 369) mention that the dictation is more valid as a spelling test than the multiple choice forms.

By choosing the dictation form I obtained the following contributions:

1. Words were strongly tied by content and their meaning was clearified by context.

2. Motivation and interest were enhances by the appealing text.

3. Items were not arranged but rather spread throughout the story (only 238 of the 338 being scored); therefore, testees could not follow patterns, but treated each word by itself, according to the semantic and syntactic clues of the sentence and the story.

4. For future investigations of the writing process it will be interesting to follow the model of the Informal Reading Inventories. Therefore small stories, accompanied by questions to be answered, will have to be constructed according to grade levels and writing criterions.

The dictated story (Appendix A) was obtained by the following procedures:

An African tale was chosen as the basic content of the story. This folk tale was proven to be appealing to students in the middle and high school. It contains elements of humor and tension, and develops a realistic situation. The happy ending does justice to an innocent

young man, and by this justification leaves the young writers satisfied.

The vocabulary of the original story was changed through the following steps:

Words were carefully selected from "The Basic Word List for Schools" (Belgour, 1968) which is a Hebrew list of frequent words used in the school curriculum (Appendix C). This list was constructed according to Hebrew materials taught in schools in Israel, and might not fit completely the studies of a second language. However, being the only list available in Hebrew, it was seen as an important tool to be used. As mentioned by Marino (1979), frequency has been shown to correlate with spelling ease. Therefore words of high frequency, median frequency, and low frequency were included in the items of the test.

Vocabulary, syntactic complexity, and conceptual loading of the test was controlled by comparing it to the curriculum materials (Bar-Kol and Lidovski, 1974; Veis, 1979; Bachrach and Ackselord, 1972).

Error Analysis

In the error analysis (Appendix E) of this test two procedures were used.

The objective procedure, where the examiner has to concentrate on the problem that the item was designed to test, disregarding all others. In three columns, representing the three categories of the linguistic components, the error words v.s. the target correct words were listed. The percentage of every one of these three columns will provide the examiner with the information about weaknesses and strengths of the students in each one of the three categories.

The subjective precedure, where peculiarities and individual types of errors were listed in a fourth column. Errors such as reversals, negative transfer from other

languages, or incorrect phoneme-grapheme relationships were listed v.s. the correctly spelled words. This part of the test needs the attention and knowledge of a professional examiner with the additional information of the child's history, performance in other academic fields (i.e. reading), and results of tests in his auditory and visual areas. In a second language spelling test the variance of unknown vocabulary is strongly related to this part. In other words, if a response on an item is very peculiar and far from the stimuli, the examiner will have to consider and treat the question: Was the stimulus word understood by this student? During the analysis of this column there might also be a need for additional information received by interviews with individuals, their families, and their teachers.

Description of the Population

The population considered for this study included 300 sixth through twelfth grade students enrolled in Hillel Academy middle and high school. Located in Pittsburgh, the school draws its students from the Jewish population. The students come from middle and upper income Jewish families.

The sample involved in this study were three groups:

Group I - Eight students of the sixth grade level.

Group II - Fifteen students of the seventh grade level.

Group III - Seven students of grades 9, 10, and 12 together building a group for Hebrew instruction.

The characteristics of the sample are presented in Table 1. The data presented in Table 1 indicate that there are more female students (.73) than male students (.26) in the sample. The age ranged in the middle school from 11 years to 13 years, and for the high school from 14 years to 18 years.

TABLE 1

Characteristics of Sample
According to Sex and Grade

Grade	Age	Boys	Girls	% of Boys	% of Girls
6	11 - 12	1	7	.12	.87
7	12 - 13	7	8	.46	.53
9 - 12	14 - 18	0	7	.	.1
6 - 12	11 - 18	8	22	.26	.73

Procedures and Methods Used to Gather Data

The test was administered to each one of the three groups of students during two consecutive sessions of 25 minutes each.

Students were given a blank sheet of paper and the following instructions verbatim:

> I am going to give you a spelling test in Hebrew. It is a rather long test but you won't find it very hard. There may be a few words you do not understand, or others you haven't studied before, but I want you to try to spell them the best you can. This is not one of your regular spelling tests and it will not effect you spelling marks.
>
> I will read you a story. First you have to listen only. Then, I will repeat the story, sentence after sentence, at such a pace that you will have enough time to write it down. If we do not finish in this session we'll continue in the next session.

Following administration each student's errors were analyzed and tabulated. The scoring procedure was:

One point scored for each written word in which the target pattern was correct.

Zero points scored for each written word in which the target pattern was incorrect.

Words which included errors different from the target pattern were marked in the fourth column, but did not effect the scoring procedure. Some words included more than one pattern. These were scored as one point for each correct pattern, and zero points for an incorrect pattern.

CHAPTER IV

Presentation and Analysis of Data

The Data Summary

The discussion in this chapter will be focused on the attempt to answer the research questions.

The first research question of this study was to identify the appropriate areas of content that should be included in an instrument for the diagnosis of spelling ability. The answer to this question is the result of an analysis of theoretica materials presented in the "Review of Literature", as well as the result of careful observations of spelling errors during eight years of teaching the Hebrew language to Israeli students in Israel, and to American students in the U.S.A.

By adopting certain theories (e.g., Marino, 1979; Carol Chomsky, 1978) to the Hebrew spelling system, I suggest three areas of content. These areas proved to be adequate by the error analysis results. The relationship among these three areas was established by the Pearson r correlation coefficient, and showed a moderately high positive correlation (r = .75 and .78).

The second research question was in regard to the levels of mastery in the areas of content in the different groups of students. This question is answered by the analysis of the standard z score, which is defined as the distance of a score from the mean, as measured by standard deviation units. Grouping was suggested according to strengths and weaknesses as shown by the z score obtained.

Another interesting outcome of the statistical analysis shows that for this sample the most problematic area is the morphophonemic level, represented in the third subtest by stems. The second area of function words (in subtest 2) is a less problematic area, and the spelling patterns according to rules is the least problematic part.

The third research question as to how to individualize diagnosis and instructions is answered by a case study. First, the results of three students' scores is shown in a table and in a diagram. The table and the diagram emphasize that levels of mastery differ from one student to another. This data clearly indicates the levels of difficulty mentioned above; "the stems" level is the most problematic, the "function words" area is less problematic, and the "patterns according to rules" is the least problematic area. An example of the examination and analysis of errors is presented in a mini case study. The teacher can add to the analysis by looking at outside factors such as case history, performance on other tests, interviews with parents, etc. Using all this information, the teacher can devise a remedial program.

Finally, the last research question in regard to validity and reliability is answered by psychometric investigation of the validity and reliability of the test. Several procedures were used to establish construct and content validity. The reliability of the test was measured with Kuder-Richardson formula 20, and a result of $r = .90$ was found for the whole test. The dictation, as a valid and reliable tool for measuring spelling ability, was suggested by Smith (1980).

Figures, Tables, and Their Interpretation

The first step in constructing the test was to define the term of spelling. The following theoretical model of spelling fits the purpose of the study of a foreign language:

> The spelling process may be seen as incorporating knowledge at three levels: the phonetic level (i.e., cueing on formation of speech sounds), the graphemic level (i.e., cueing on sriting system characteristics), and the morphophonemic level (i.e., cueing on an abstract lexical representation). (Marino, 1979, p. 17)

The second step was the selection of sets of elements. The division of components in the test includes these four areas:

1. Spelling patterns according to rules. Suffixes, prefixes, and other patterns which have to be included in the language instructions (e.g., הוֹסַעְתָּ- hoṣetâ (you took out); שִׁקַּרְתָּ- śiqârtâ (you lied); דִּבַּרְתָּ - dibârtâ (you spoke)).

2. Graphemic representation in function words (sight words) (e.g., כִּי- ki (because); אִם- im (if); עַל- al (on)).

3. Morphophonemic level represented by stems in different words (e.g., נתן-n.t.n. (to give); מות-m.v.t. (to die)).

These three areas were basically checking the occurance of the following problematic pairs of grapheme representation, mentioned in Chapter II, "The Hebrew Spelling System":

a - a	b - v	h - k	k - q	s - ś
א ע	ב ו	ה כ	ד ק	ס שׂ

According to the definition of spelling, these three divisions of components belong to the graphemic and morphophonemic levels, illustrated in Figure 5.

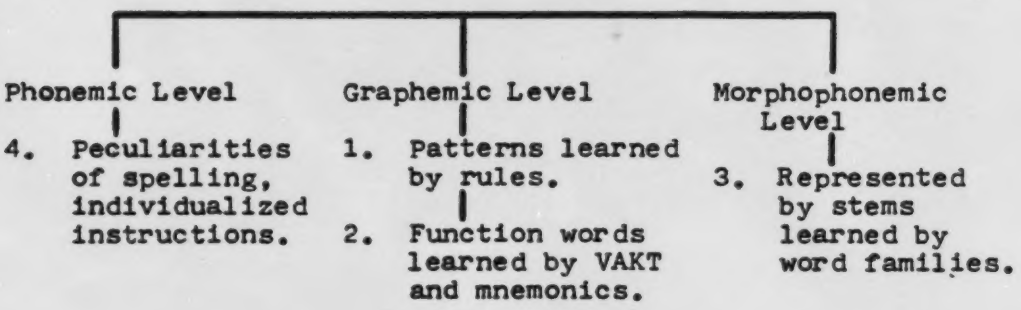

Phonemic Level
4. Peculiarities of spelling, individualized instructions.
Graphemic Level
1. Patterns learned by rules.
2. Function words learned by VAKT and mnemonics.
Morphophonemic Level
3. Represented by stems learned by word families.

Figure 5: Analysis of Components of the Test

Figure 5 shows the representation of the three categories (e.g., phonetic level, graphemic level, and morphophonemic level) by four criterions, and the procedures used for instruction.

The relationship among three areas represented by the three subtests (the patterns according to rules, the function words, and the stems) was measured by the Pearson correlation coefficient. The product moment coefficient of correlation, cal'ed Pearson r, is defined as the mean of the z score products. When two variables are highly related in a positive way, the correlation between them will be +1. Table 2 shows the correlation coefficients among the three subtests.

Table 2 shows a moderately high positive correlation among the subtests, which indicates that the subtests are measuring similar aspects of spelling. Nevertheless, the correlation coefficient is not very high, which means that the areas and the skills needed for accomplishment in these areas can be differentiated from one another.

According to the second research question in regard to the assessment of mastery levels, the errors committed by each student were tabulated and standardized for obtaining areas of strengths and weaknesses. The standard score of the 30 students was obtained by the z score. According to Ary, Jacobs, and Razavieh (1972), the z score is a widely used standard score that plays an important role in statistical analysis. It is defined as the distance of a score from the mean, as measured by standard deviation units. This procedure enables us to compare different students' scores, and scores on different subtests or different tests. Tables 3.1, 3.2, and 3.3 present the distribution of raw scores, frequency, and z scores within the three groups of students.

In Tables 3.1, 3.2, and 3.3 the raw score was obtained by counting the number of the correct words in each student's subtest. The frequency shows the number of students who received this score. The z score was obtained by calculating the distance of that score from the mean. According to Tables 3.1, 3.2, and 3.3, the students within the different grade levels will be grouped as follows.

TABLE 2

Intersubtest Correlation

	Subtest 1	Subtest 2	Subtest 3
Subtest 1	-	.75	.78
Subtest 2	.75	-	.75
Subtest 3	.78	.75	-

TABLE 3.1

Frequency Distribution of 6th Grade

Subtest I			Subtest II			Subtest III		
raw score	freq-uency	z score	raw score	freq-uency	z score	raw score	fre-uency	z score
109	3	2.3	44	1	1.1	73	1	1.1
108	1	2.1	42	2	0.5	70	1	0.7
107	1	1.9	40	1	-0.03	69	1	0.6
106	1	1.7	39	1	-0.3	67	1	0.3
102	1	0.98	38	1	-0.6	66	1	0.2
98	1	0.2	35	1	-1.5	61	1	-0.4
			34	1	-1.8	56	1	-1.1
						51	1	-1.8

TABLE 3.2

Frequency Distribution of 7th Grade

Subtest I			Subtest II			Subtest III		
raw score	freq-uency	z score	raw score	freq-uency	z score	raw score	freq-uency	z score
116	1	3.6	46	1	1.7	79	1	1.9
111	1	2.7	44	2	1.1	74	1	1.3
109	1	2.3	43	1	0.8	72	1	1.02
108	1	2.1	42	1	0.5	70	2	0.7
106	4	1.7	41	1	0.2	67	1	0.3
102	1	0.9	40	3	-0.03	66	1	0.2
99	4	0.4	39	2	-0.3	64	1	-0.05
98	3	0.2	38	2	-0.6	59	2	-0.7
96	1	-0.1	37	1	-0.2	57	3	-1.0
94	1	-0.5	33	1	-2.15	53	2	-1.5

TABLE 3.3

Frequency Distribution of Upper Grades

Subtest I			Subtest II			Subtest III		
raw score	freq-uency	z score	raw score	freq-uency	z score	raw score	freq-uency	z score
119	1	4.2	44	4	1.1	77	1	1.7
111	1	2.7	41	1	0.2	73	1	1.1
109	1	2.3	40	1	-0.03	70	1	0.7
108	1	2.1	39	1	-0.3	65	2	0.08
105	1	1.5				62	1	-0.3
103	1	1.1				60	1	-0.5

In the 6th grade, there is no need for urgent instruction in the first subtest area (the patterns according to rules). Five students show weakness in the area of the second subtest (function words), and three students show weakness in the area of the third subtest (the stems). All students need instruction to raise their level of mastery.

In the 7th grade, two students show weakness in the area of the first subtest (the patterns) nine students show weakness in the area of the second subtest (the function words), and eight students show weadness in the area of the third subtest (the stems). All students need instruction to raise their level of mastery.

In the upper grades (9th through 12th) group students do not show weakness in the area of the first subtest (patterns according to rules), two students show weakness in the area of the second subtest (function words), and two students show weakness in the area of the third subtest (the stems). All students need instruction in order to raise their level of mastery.

In conclusion, the mastery levels in the three subtests obtained by each student differ from individual to individual, and from grade to grade. Instruction is needed until mastery is achieved. According to this test, mastery performance is the maximum z score of the subtest as presented in Table 4.

Table 4 indicates the levels of full mastery as represented by the z score. By comparing these scores to the scores achieved by a student, the examiner can decide how far a student, or a group of students, is from full mastery.

An interesting outcome of the statistical analysis is the mean of the z scores of all students (30) on each one of the subtests, as shown in Table 5. Table 5 indicates clearly that the third subtest (stems) was the most problematic area. Students had more errors of substitutions

TABLE 4

Maximum and Minimum Scores
of the Subtests

Subtest	Max. z score	Min. z score
1. Patterns According to Rules	2.9	-18.6
2. Function Words	1.7	-12.6
3. Stems	2.1	-8.7

TABLE 5

The Mean of the z Scores

	Subtest 1 (patterns according to rules)	Subtest 2 (function words)	Subtest 3 (stems)
Mean of the z Score	1.59	0.12	0.03

(phonetically adequate) in one of three graphemes of the stem than in any other area. This result shows that teachers have to emphasize the "deep structure" and use different methods in order to bring to the students' attention the meaning of the correctly spelled stem.

The next problematic area is the function words area (subtest 2). This area is confusing for students because it has no rationale. Nevertheless, it is significant to spell these words correctly, in order to obtain the target meaning of the written sentence.

The last problematic area, for this sample, is the area of patterns according to rules (subtest 1). It is obvious that when patterns are regular and rules can explain their occurance, the performance of students is better.

The third research question, in accordance with the individualizing of diagnosis and instructions as a result of the performance on the test, is answered by an analysis of a case study. The case study includes the original test written by a 6th grade student. Attached to their papers is a correction of errors, including a four column table of errors (Appendix E). These columns represent the four areas of difficulty: the spelling patterns according to rules, the function words, the stems, and different peculiarities in spelling. After an indepth examination of the students' errors, suggestions on diagnosis and general instructions are made. The extent of the case study was limited by the fact that interviews with parents and teachers of the students, and familiarity with case history and other data such as performance on other tests, were not available. Nonetheless, this analysis provides the teacher with conclusions on strengths and difficulties of the student in the different areas of spelling, and suggests general instructions.

In order to demonstrate the performance of one student in relation to others, three students were randomly selected

from the sample. Student A (6th grade), student B (7th grade), and student C (12th grade) scored on the three subtests as presented in Table 6.

Table 6 shows the raw score of students A, B, and C on each subtest, and the conversion of the raw score to a z score which enables us to compare the different scores on the different subtests on one scale. The z scores are used to describe each student's performance scale, as shown in Figure 6.

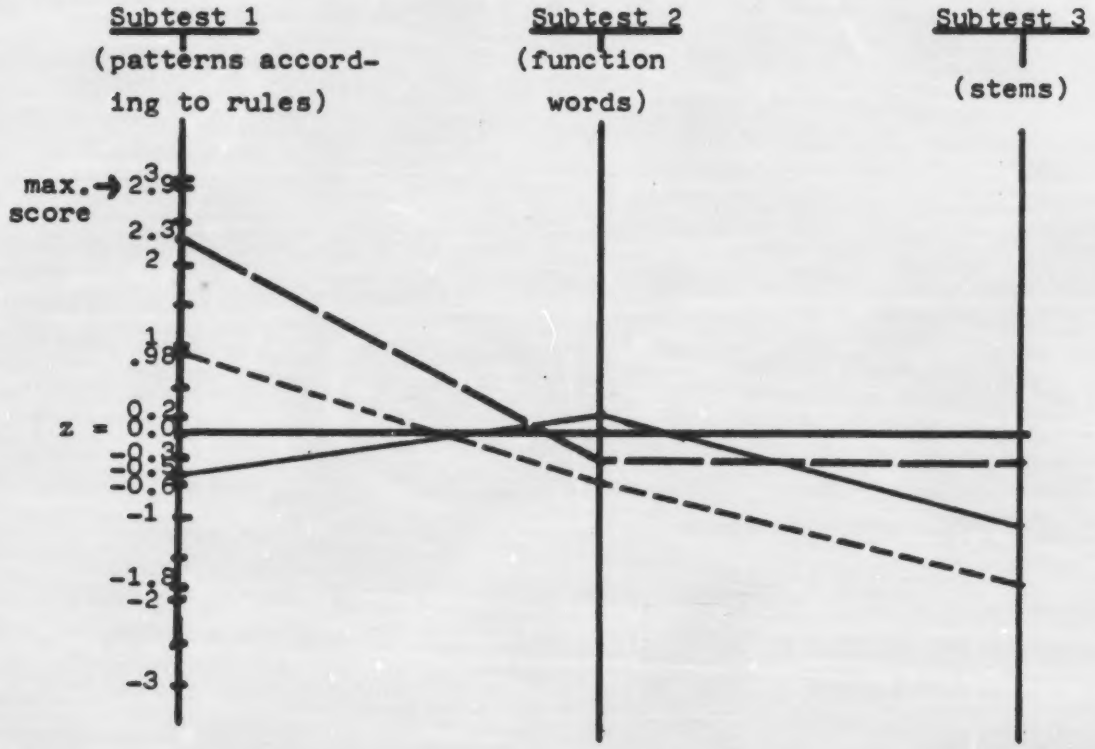


Figure 6: Performance of Three Students on The Three Subtests

Student A (6th grade) — — — — — —
Student B (7th grade) ————————
Student C (12th grade) —— — —— —

TABLE 6

Performance of Three Students
on the Three Subtests

Student	Subtest 1		Subtest 2		Subtest 3	
	raw score	z score	raw score	z score	raw score	z score
A	102	0.98	38	-0.6	51	-1.8
B	94	-0.5	37	0.2	57	-1.0
C	109	2.3	39	-0.3	62	-0.3

Figure 6 shows that students A, B, and C have different mastery levels on the three subtests.

Student A exhibits a low moderate mastery in the area of the first subtest (patterns according to rules), a slight deficiency in the area of the second subtest (function words), and a stronger deficiency in the area of the third subtest (stems).

Student B exhibits a slight deficiency in the area of the first subtest (patterns according to rules), a slight positive mastery in the area of the second subtest (function words), and a slight to moderate deficiency in the area of the third subtest (stems).

Student C exhibits a strong mastery in the area of the first subtest (patterns according to rules), a slight deficiency in the area of the second subtest (function words), and a slight deficiency in the area of the third subtest (stems).

A general view of the diagram shows that the area of the first subtest (patterns according to rules) is an area in which students' performance of spelling is the highest. The scores in the area of the second subtest (function words) show a moderate performance, while the scores in the area of the third subtest (stems) indicate that this area is the most problematic. Support for this interpretation resides in the data of the mean of the 30 students' z scores on the three subtests, as shown in Table 6. As stated there, the morphophonemic area (represented by the stems within words) was found to be the most problematic area.

By examining the specific patterns in which the students performed inadequately, and the repetition of errors, the teacher can zero in on specific problems, as shown in the following analysis.

Student A exhibits a low moderate mastery in the area of patterns according to rules (his z score is 0.98 while the maximum z score is 2.9). The error examination indicates a need to introduce him to the following patterns:

1. Words which are borrowed from other languages are spelled in Hebrew as decided by the Hebrew Language Academy; using the Hebrew grapheme ט (ṭ) for 't', ת (t) for 'th', ק (q) for 'k', and כ (k) for 'ch'. For example:
   "tragedy" - "טרגדיה", and
   "tractors" - "טרקטורים".

2. The spelling of the pronominal suffix of the noun in masculin and feminine. For example:
   "your (m) wife" - "אשתך", and
   "your (f) hands" - "ידיך".

3. The spelling of the adjective suffix (the dipthong "ai"). For example:
   "responsible" (ahrai) - "אחראי", and
   "righteous" (zakai) - "זכאי".

4. The spelling of the preposition "when" as an abbreviation in the prefix. For example:
   "when he heard" - "כשמע", and
   "when in her hands" - "כשבידיה".

There is a need to enhance knowledge of the following patterns:

1. The spelling of suffixes which indicate the past tense of the verb for second person singular masculin, as in "you brought out" - "הוצאת".

2. The spelling of the prefix in the conjugation of the verb reflected by the 's' sound, as in "he was sorry" - "הצטער".

3. The spelling of the prefix in the future tense first person singular, masculin and feminine, as in "I will be" - "אהיה".

These words were mispelled as follows:

Stimuli	Response
טרגדיה - ṭ	תרגדי - t
טרקטורים - ṭ	תרכתרים - t
אשתך - ך	אשתח - ח
ידיך - ך	ידיח - ח
אחראי - e	אחרעי - ע
זכאי - e	זכי - -

These are examples of the spelling errors. The others are listed in the table of errors (Appendix E). The errors are classified as substitutions and all of them are phonetically adequate.

On the second subtest (function words) student A showed a slight deficiency (his raw score is 38 and his z score is -0.6). The error examination indicates a need to differentiate between the similarly pronounced words, which have different spelling and different meaning, for example:

Stimuli-- (al) - "אל" Response-- (al) - "על".

Other errors exhibit a specific difficulty, for example:

Stimuli		Response	
"עכשיו"		"אתשיו"	
"על"		"אל"	
"אל"		"על"	
"בעלמא"		"בעלמה"	

The h - ḥ graphemes are confused and instruction has to be focused on the differentiation between them, as well as the differentiation between the q - k graphemes.

The third subtest (stems) is the weakest area in student A's performance (his raw score is 51 and his z score is -1.8). The errors show that student A does not recognize the stems in the words, and substitutes phonetically adequate graphemes. Errors like "יפה, תמן, קכול, אמנם, and בקיטה" need to be corrected, because, as written by the student they have a different meaning from the stimuli words ("אמנם, קטה, טמן, יכול, and הכירתם"). Other words also loose their meaning when spelled with errors, for example:

Stimuli		Response	
"היום"		"דיבה"	
"עברתם"		"אברתם"	
"מגדה"		"מגדל"	

The fourth column of tabulated errors are peculiarities of nonphonetic substitution (e.g., stimuli: "כדגה" - response: "קדגה") or omission of a letter (e.g., stimuli: "מרגיה" - response: "תרגי"), which are probably a result of different causes. The first error is most

likely not in the vocabulary of student A, while the second error is a negative transfer of the word in the mother tongue ("tragedy"). A small amount of errors of this type are not significant in a second language. Nevertheless, in instruction attention has to be directed toward these types fo errors. Grouping these errors enables the examiner to draw a hypothesis about students' problems, and to find clues for methods and strategies in remediation (e.g., the negative transfer of the mother tongue to the target language).

In conclusion, the general impression from the written test is that student A is on the way to acquiring mastery in spelling. The handwriting and the patterns of errors indicate that student A is pedantic, and cares about the performance. Probably a lack of adequate instruction, in addition to the small amount of practice in writing of a second language, are the reasons for most of the spelling errors. Student A also has strength in spelling. Many difficult words like " שפגם, שהתגלגל, כדוגמא, and שקרה " were spelled correctly. Instruction has to start with words spelled correctly, like "מצוות" (miṣvot), and to show the relationship to a word spelled incorrectly, like "סבה" (ṣiḇâh). These two words have the same stem ("סבב" - "ṣvh"); and therefore, they have to be written with a 'v' and not with a 'ḇ'. Other methods and games which emphasize the relationship among words of the same family, or with the same stem, are recommended.

In regard to the second area (function words) a VAKT approach which utilizes multi-sensory methods can be very useful. For different learners, and for the purpose of making the subject matter interesting, the mnemonic clues sometimes help. For example, the word "זאת" (this is) includes a silent 'a'. In order to remember the silent 'a' the student can be told that this is the 'a' of the word " אשה " (woman).

The area of patterns according to rules is taught by explaining the ru'es in a clear and organized way, reviewing

and checking, and by pointing to similar patterns in new vocabulary.

The last research question on validity and reliability is answered by the interpretation of data. As a tool of measuring spelling ability, the dictation is seen by the literature as a valid and reliable tool (Lado, 1964; Balette, 1967; Smith, 1980).

Construct validity refers to the extent to which a test reflects constructs presumed to underlie the test performance, and also the extent to which it is based on theories regarding these constructs (Ary, Jacobs, and Razavieh, 1972). In the construct validation of this test a number of inferences were made from theory and experience regarding the linguistic areas to be tested.

The steps in the construct validation of this test were as follows:

1. Certain constructs exist and account for a spelling test performance. The problematic areas are represented by 13 graphemes which symbolize six phonemes: a-a-h, w-b, h-k, s-s, t-t, and q-k.

2. A hypothesis from the theory emphasizes three dimensions of the language. The spelling process may be seen as incorporating linguistic knowledge at three levels: the phonetic level, the graphemic level, and the morphophonemic level (Marino, 1979). Two of these levels, the graphemic and the morphophonemic, were chosen as the dimensions where the problematic graphemes can occur. Within these two dimensions, three sub-areas were found to categorize words which include the problematic graphemes.

One of the sub-areas (subtest 1) presented patterns of spelling according to rules, each pattern being represented by three examples. The threefold representation helps the examiner to decide if the student knows the pattern or wrote it correctly by incident.

In constructing the test, vocabulary which included the characteristics mentioned above, was drawn according to the

following procedures:

1. Most of the words are found in the frequency list Belgour (1968) (Appendix C).

2. Most of the words were found in the curriculum on these grades.

3. Sentence difficulty and notion load were intuitively compared to the materials' level.

By these procedures I also assured content validity, which refers to the degree to which the content area of the test samples are accurately measured.

The reliability of this test was established by the Kuder-Richardson formula 20, which is an estimate for internal consistency of a test. The KR_{20} was found to be appropriate because this is a "power test", in which each student has enough time to show what he knows.

Table 7 shows the reliability coefficient of each subtest, its mean, and standard deviation. The reliability coefficient of the whole test is 0.9. This test is a long test (238 items) and as stated by Ary, Jacobs, and Razavieh (1972), the longer the test is, the greater the sample items' size is composing a better sample of the population items. Other contributors to the high reliability of this test wer the heterogeneous spread of the subjects who took the test, and the difficulty level which was appropriate.

In the subtests, the reliability coefficient varied. Subtest II had the lowest reliability coefficient of .66, which can be explained by the subject matter it measured. Function words are dependent on the following words, and their spelling can not be explained. Students probably guess most of these items; and therefore, the reliability coefficient is lower. The high reliability of subtest III is an important outcome, showing that the area of "deep structure", mentioned in the "Review of Literature", is a reliable area to be measured.

The reliability coefficient across grades was measured and is shown in Table 8. Table 8 indicates a high positive reliability coefficient for all grade levels. The upper

TABLE 7

Reliability of Subtests

Number of Cases	Number of Subtest	Number of Items	Mean	S.D.	Reliability Coefficient
30	I	112	96.9	5.2	.74
30	II	46	40.1	3.3	.66
30	III	80	64.4	7.4	.83

TABLE 8

Reliability Coefficient Across Grades

Grade	Number of Cases	Number of Items	Reliability Coefficient
6	8	238	0.88
7	15	238	0.9
9,10,12	7	238	0.9

grades (9th, 10th, and 12th) are instructed in Hebrew language classes as one group. It is interesting to see that the reliability coefficient is still high in spite of the fact that these students had a heterogeneous number of years in Hebrew language.

In conclusion, the test may be regarded as reliable and valid. As a result of the statistical analysis, certain items have to be dropped out in the revised test. These items, presented in Appendix F, are either too easy or do not fit the linguistic aspects checked by the test. For practical reasons, it is suggested that the revised test be shorter.

Summary and Conclusions

An informal diagnostic spelling test of Hebrew as a second language was constructed and administered to students in a Jewish day school. As evidenced by the subjects in this study, spelling errors in Hebrew tend to centralize in four areas: the spelling patterns according to grammatitical and phonetic rules, the function words, the stems as representing the morphophonemic level, and the phonetic peculiarities. There is evidence that the subjects of this sample experience difficulties mostly in the problematic area of similar phonemes represented by different graphemes. The diagnostic test suggested in this paper differentiates and scores spelling errors according to the criterions mentioned above. The findings of this study provide evidence that the area of stems as representing the morphophonemic level is the most problematic area. Less problematic is the area of function words. The area of patterns of spelling according to rules is the most known area by the subjects of this sample.

It appears that this type of error analysis may be efficient for individual diagnosis, as well as for group diagnosis. By administering this test and analyzing the results,

instructional categorizations are brought to the attention of the teacher. It is hoped that the test will be used as an opportunity to analyze spelling errors in a more structured way.

Finally, I would like to conclude with the words of the Greek philosopher Aristotle (340 B.C.), "It is possible to spell a word correctly by chance, or because someone prompts you, but you are a scholar only if you spell it correctly because you know how." (The Nichomachen Ethics II)

Recommendations for Further Research

The findings of this study were significant with respect to the population studied, but generalization to other populations is questionable because of the small size of the sample. In addition to the obvious recommendation that the study be replicated using a larger population, one might consider a development of cross-grades analysis of spelling errors. An investigation of spelling errors through various grade levels will probably be helpful in constructing an inventory of spelling. Further research is need for establishing spelling patterns in connection with linguistic phenomena specific to the Hebrew language.

There is a certain need to revise the test according to linguistic and psychometric aspects. In the revised test it is recommended to use a shorter story, omitting items which were not found as significant from the linguistic viewpoint, and from the psychometric viewpoint (Appendix F). Further research in the scoring system will differentiate among different errors in the fourth category, and suggest a more efficient strategy for the use of the teacher. Research in the areas mentioned above could lead to the development of a more useful analysis of spelling errors.

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Appendices

Appendix A

Dictated Story in Hebrew and in English Translation

DICTATED STORY IN ENGLISH TRANSLATION

Dan's father was sick. He had a headache for seven days and the Physician told him to rest. One day he called his wife and his son and told them, "You know my friend Joseph. I asked him to take care of our house until our son reaches the age of 13. He has to do whatever I write here. You've always said he is an honest man." The woman did not answer, but the expression on her face answered that she was not happy.

After a few days the father died. Everybody went to Jerusalem to bury him. When they came home their friend Joseph told them, "You went through a big tragedy, now you have to get married and forget all your troubles."

A few years passed, and Dan reached the age of 13. He wanted to work in his father's fields. Therefore he came to the south, to Joseph's house, and told him, "I reached adulthood. You took out my father's tractors, and I want you to be my counselor in the work on my mother's fields and on my fields.

The friend was very angry when he heard this. He claimed that he bought the tractors when the father was sick.

"You can be sure," said Joseph, "that I will not lie and that I will not take your part. But I hope that I will not have to give from my own."

At this point Dan took out his father's letter. In the same moment the letter fell into some water and was ruined. Joseph was not sorry about that. But Dan called, "We will go to the Judge!"

They told the Judge everything that happened. The Judge asked Dan to bring his mother, and he also told the friend, "Please call your wife and ask her to join you."

Each couple took a heavy suitcase and circled the city. At the end of the trip the Judge would show who is the guilty man and who is the innocent one.

DICTATED STORY IN ENGLISH TRANSLATION

On their way, the friend's wife was very angry at him and said, "If you didn't lie we wouldn't be in such a situation now." Her husband answered her, "Why are speaking this way? Why do you cause me sorrow? In a time of tension you want to be innocent. But you can't do that because you have already enjoyed the theft and your children have enjoyed it too."

Dan and his mother talked too. Dan said, "My father is certainly listening to my prayers for help. You might be concerned mother, but I am responsible for your house." The mother answered while carrying the suitcase, "One needs a strong personality in order to prove the truth. Your father asked him to take care of us, and to love us."

They came to the Judge's room. The mother's feet were hurting her. Everybody was very tired. The Judge opened the suitcases and both of his helpers jumped out and told the stories that they had heard on the way.

The Judge found that Dan was innocent and said, "Dan, you told the truth, and Joseph lied."

THE DICTATED STORY IN HEBREW

אבא של דן היה חולה. שבעה ימים כאב ראשו והרופא ציוה עליו לנוח. יום אחד קרא אליו את אשתו ואת בנו, ואמר להם: "אתם הכרתם את חברי יוסף. בקשתי ממנו לשמור על ביתכם עד שבנכו יגיע למצרות. הוא צריך לעשות כל מה שאני כותב פה. תמיד אמרת שהוא איש ישר". האשה לא ענתה דבר, אבל פניה ענו לאב כי אין היא שמחה.

לאחר כמה ימים מת האב. כולם עלו ירושלימה כדי לקבור אותו. כאשר חזרו הביתה אמר להם חברם יוסף:"עברתם מרגדיה גדולה. עכשיו את חיבת להתחתן ולשכח מכל הצרות".

עברו שבים ודן הגיע לגיל שלוש-עשרה. הוא רצה לעבוד באדמות של אביו. לכן ירד דרומה, לביתו של יוסף, ואמר לו: "הגעתי לבגרות. אתה הוצאת את המרקסורים של אבא, ואני רוצה שאתה תהיה המדריך שלי בעבודה על אדמותיה של אמי, ועל אדמותי שלי".

החבר התרגז מאד כששמע זאת. הוא טען שקבה את המרקסורים כשהאב היה חולה. "יהיה לבכם שקם" אמר יוסף " שלא אשקר ולא אקח את הסביע לכם, אבל אני מקוה שלא אצטרך לתת משלי".

אז הוציא דן את מכתב אביו. באותו רגע נפל המכתב למים והתקלקל. יוסף לא הצטער על כך, אולם דן צעק: "בלך אל השופט".

אצל השופט, סיפרו שניהם את מה שקרה. השופט בקש מדן להביא את אמו, וגם לחבר אמר: "בא לקרוא לאשתך להצטרף אליך".

כל זוג לקח מזודה כבדה והלך מסביב לעיר.

בסוף המיול רצה השופט להוכיח מי הרמאי ומי הצדיק.

בדרך כעסה האשה על בעלה ואמרה: "אלו לא שקרת לא הייבו עכשיו במצב זה". עבה לה בעלה: "מדוע את מדברת כך? מדוע את מצערת אותי? בשעת הלחץ את רוצה לאסוף ידייך מהעבין. אבל כבר בהבייה מהגבבה, וגם ילדייך נהגו".

דן ואמו גם כן דברו. אמר דן: "אבי בודאי שומע את קריאת העזרה שלי. את אולי דואגת אמא, אבל אבי אחראי לבימך".

עבתה האם כשבידיה המזודה: "צריך אישיות חזקה כדי להוכיח את האמת. אביך בקש ממנו לדאוג לנו ולאהוב אותנו. הם באו למרקלין של השופט. רגליה של האם כאבו. כולם היו עיפים.

השופט פתח את המזודות ושני עוזריו קמצו מהן, וסיפרו את השיחות ששמעו בדרך.

השופט מצא שדן זכאי, ואמר: "דן, אמת דברת ויוסף שיקר".

Appendix B

Transcription of the Hebrew Alphabet

TRANSCRIPTION OF THE HEBREW ALPHABET

Form	Transcription*	Name
א	a	alef
ב ב	b, b̲	bet, vet
ג	g	gimel
ד	d	dalet
ה	h	he
ו	w	waw
ז	z	zayin
ח	ḥ	ḥet
ט	ṭ	ṭet
י	y	yud
כ ך (final ך)	k, k̲	kaf
ל	l	lamed
מ ם (final ם)	m	mem
נ ן (final ן)	n	nun
ס	s	samekh
ע	a̲	a̲yin
פ ף (final ף)	p, p̄	pe
צ ץ (final ץ)	ṣ	ṣade
ק	q	qof
ר	r	resh
שׂ	ś	sin
שׁ	š	shin
ת	t, t̲	taw

*The transcription used in this paper for Hebrew words is the international transcript. Modifications in two cases (a, a̲) were made for convenience in typing.

TRANSCRIPTION OF THE HEBREW ALPHABET

Transcription of Vowels

◌ַ ◌ָ ◌ָה	a
◌ֶ ◌ֵ ◌ֵי	e
◌ִ ◌ִי	i
◌ֹ ◌ֹו	o
◌ֻ ◌ֻו	u

Appendix C

The Scored Words of the Dictation in Alphabetical Order and Frequency

THE SCORED WORDS OF THE DICTATION IN ALPHABETICAL ORDER AND FREQUENCY

Subtest No. 1: Patterns According to Rules

The Word in "Belagaur" List	Frequency	The Dictated Word
אחראי	8	אחראי
אב	251	אב
אבא	293	אבא
אביו, אביך		אביו, אביך
אדמות, אדמותיה	187	אדמות, אדמותיה
איש	706	איש
אישיות	-	אישיות
אליך	1545	אליך
אם	219	אם
אמא	237	אמא
אמרתי, אמרת	1627	אמרתי, אמרת
אצטרך	13	אצטרך
אקח	8	אקח
אשקר	11	אשקר
אשתו		אשתו
אתם	74	אתם
בגרות	-	בגרות
בדרך	409	בדרך
ביתך, ביתכם	986	ביתך, ביתכם
בנו	599	בנו
בקשתי	264	בקשתי
דברת	218	דברת
דרומה	44	דרומה
האב	251	האב
האם	219	האם
האשה	234	האשה
הבית	986	הבית
הגיע, הגעתי	389	הגיע, הגעתי
הוציא, הוצאת	150	הוציא, הוצאת

Subtest No. 1: Patterns According to Rules

החבר	238	חבר
המרקטורים	9	מרקטור
הכרחם	93	הכיר
הלחץ	49	הלחץ
המדריך	18	המדריך
הצדיק	16	הצדיק
הצטער	22	הצטער
הצרות	52	הצרות
הרופא	64	רופא
הרמאי	9	הרמאי
השופט	37	השופט
התקלקל		התקלקל
התרגז	8	התרגז
ומי	347	מי
ושבי	79	שבי
זכאי	9	זכאי
חברו	238	חבר
חזקה	91	חזק
חזרו	253	חזר
מרגדיה	8	מרגדיה
מרקטורים	9	מרקטור
מרקלין	5	מרקלין
יגיע	385	הגיע
ידיך	913	ידי
יהיה	6	יהי
ילדיך	78	ילד
כעסה	5	כעס
כשבידיה	913	יד
כשהאב	251	אב
כששמע	413	שמע
לאהוב	111	אהב
לאסוף	77	אסף
לבכם	535	לב
לביתו	986	בית
להביא	218	הביא

Subtest No. 1: Patterns According to Rules

להוכיח	24	הוכח
להצטרף	49	הצטרף
לכם	-	לכם
לנוח	46	נוח
לעבוד	142	עבד
לעשות	545	עשה
לקרוא	584	קרא
לשכוח	70	שכח
מה שאני	958	מה
מגיע	11	מגיע
מה שקרה	958	מה שקרה
נהגית	120	נהגה
עברו, עברתם	8	עבר
עוזרין	92	עזר
עלו	434	עלה
ענתה	271	ענה
פניה	467	פנים
צריך	125	צריך
רגליה	279	רגל
רמאי	9	רמאי
שלי	2765	של
שומע, ששמעו	413	שמע
שיחות	84	שיחה
שמחה	63	שמח
שקרת	11	שקר
תבוא	38	בוא
תהיה	3038	היה
תעשה	545	עשה

Subtest No. 2: Function Words

Frequency	The Dictated Word	Frequency	The Dictated Word
-	כולם	400	אבל
-	כן	182	אולי
97	כל-כך	248	אולם
3252	לא		אבחנה
-	לאחר		אז
-	לה	104	אילו
-	להם	1387	אין
-	לו	1545	אל(אליו,אליך)
60	לכן	943	אני
1391	כי	131	אצל
439	מאוד	131	את
102	מדוע	386	אתה
-	ממנו	74	אתם
-	משלי	140	באותו
172	גא	5	בודאי
	עד	2000	הוא
125	עכשיו	789	היא
3295	על	454	זאת
	עליו	1541	זה
148	פה	149	כאשר
3765	של	351	כבר
140	תמיד	308	כדי

Subtest No. 3: Stems

אדם	187	לקח	233
אהב	111	מות	83
אמר	1627	מצא	340
אסף	77	סבב	57
בגר	-	נגע	43
בוא	38	נוח	46
בקש	244	נהגה	20
בעל	246	נתן	323
דאג	26	סגב	15
דבר	218	עבד	142
דרכ	68	עבר	368
היה	3038	עזר	92
הכר	9	עיר	275
הלכ	624	עיפ	61
זוד	13	ענין	125
זכה	71	ענה	271
חזק	91	עלה	434
חזר	253	עשה	545
חיב	43	פתח	303
חלה	36	צדק	15
חתן	17	צוה	69
טיל	30	צעק	64
טען	24	צער	37
יגע	389	צרך	125
יכח	24	צרפ	11
ירד	293	צרר	-
יצא	543	קבר	9
כאב	10	קוה	35
כבד	82	קלקל	8
כעס	5	קנה	95
כתב	144	קלקל	8
לחצ	49	קנה	95
לכלכ	6	קמצ	140

Subtest No. 3: Stems

584	קרא
101	קרה
471	ראש
293	רגע
32	רגז
64	רפא
303	רצה
84	שיח
70	שכח
80	שמח
413	שמע
377	שעה
11	שפט
90	שקט
9	שקר
193	ספר

Appendix D

Subtest #1: Division of Patterns

SUBTEST #1: DIVISION OF PATTERNS

Verb Patterns

Noun Patterns continued

בּיתָבֶם	הַבּוֹקֶר
לְבַכֶּם	קְרוֹבִים
לְכֶם	יְרוּשָׁלַיִם
	שׁוּלְחָן
אוֹתָנוּ	אִמָּא
לְכוֹתֵב	
שִׁיחוֹת	בְּדֶרֶךְ:
	אֲדֻמִּים:
אוֹשִׁיוֹת	לְבָנִים:
הַמְכוֹנִית	

Adjective Patterns

אַמְתָּלִי

כְּתָבִי

רִאשׁוֹנִי

Definite Article Patterns

הָאוֹר	הַגַּמָּל
הַיּוֹם	הַמַּדְרִיךְ
הַשָּׁנָה	הַלְּבָנִים
הַבַּיִת	הַגְּדוֹלוֹת
הָרֶסְטוֹרָנִים	הַיְרוּשָׁלַיִם
הַתַּבָּח	הָרִאשׁוֹנִי

הַשּׁוּלְחָן

Other Patterns

שבוע.	מה שעה
שמח.	מה שקר
שקר	
	משהו
אני	משוגע
יום	משוגעת

Appendix E

Examples of the Test Written by Three Students, and the Lists of Errors

THE WRITTEN TEST, STUDENT A

A

כי גיל מקום מצבים שיבבה והקל משבון ס"ר. בשוף
וקם פחבב אמר שו... פקרוא לא'שנ'ק להבדיל אלי
אות מג. בקרא. השופט בקל מ פן שהביא את אי'מ
אומלם בן בסק רפק. אם בשופט. אומם השופט סברו ני'הם
שפם המכתב פ'מ זה בקלקל. יוסף פא הבואר אל קמ.
פטת מש'. את הוב'א בן את מכתב שוב'. בשותו רצא
אוקח את המ'ה פכם. אפל אנ' מכדה שפא שוב'ר'ח
אמ'ה פשם שק אומר יוסף שפא אשקר ופא
היה חולה.
כשא שמש צוב חוא בזן שקנה את התרבתורים כשהוב
אפמותהה שם אנ' וזם אדמות פל'. החזר התרבצ משוב
שם אבא ואנ' רוצה שנבי'ה המבית שם' באוזנה עם
ואומרים "הצאת פברות. אותה הוצתה את התרבתורים.
פאבוב באדמות שם שוב'ה פתן 'רב שרמה פב'תו שם יוסף
ופקום מקם הבחוב.
אחרו פ'ם וכן הצ'ם פ צ'ם שם ש- אשרה. הוא רבה
כל שקח אברתם תרצה' בבוקר. אחרו את חיבת פהתחתן
כי שם'מ כפי פקבר אותו. כאשר תברו הב'תה אומר להם
יוסף אברתם תרצה' בבוקר. אחרו את חיבת פהתחתן
ופקום מקם הבחוב.

את יוסף בדרכו לשכם.

הסיבות שגרמו לשנאת האחים ליוסף נעוצות בשני דברים: ראשית, יוסף היה בנו האהוב של יעקב, שנולד לו בזקנותו. שנית, יוסף היה בעל חלומות שבהם ראה את עצמו ואת אחיו כאילומים אלומות חיטה, כוכבים ומזלות משתחווים לו. חלומות אלה הוסיפו שמן למדורת השנאה שבערה בלב האחים.

יעקב שלח את יוסף לשכם כדי לדרוש בשלום אחיו ואת צאן אביהם. יוסף מצא את אחיו בדותן ולא בשכם. הם ראו אותו מרחוק ותכננו להרוג אותו. ראובן הציל את יוסף מידי אחיו בכך שהציע להשליכו לבור ריק במדבר. הוא התכוון להצילו בסתר ולהחזירו לאביו. אך כאשר הגיע יוסף לבור, הוא כבר לא היה ריק. הוא מצא בו נחשים ועקרבים. יוסף נאלץ להתמודד עם הסכנה הנוראה הזאת לבדו.

THE LISTS OF ERRORS

Student A

Subtest I		Subtest II		Subtest III		Peculiarities
Patterns according to rules		Function words		Stems		
Stimuli	response	stim-uli	res-ponse	stim-uli	res-ponse	stim-uli res-ponse
מרגדי – טרגדיה		אליו – עליו		דעג – דאג		גבידה – כבדה
תרכתורים–טרקטורים		אל – על		רושו – ראשו		תרגדי – תרגדיה
תרקלין – טרקלין		אחשיו – עכשיו		רמה – רומא		
		לחן – לכן		דיבה – צוה		
הוצאתה–הוצאת		זות – זאת		הקרתם – הכרתם		
מדריח – מדריך		קח – כך		יגיה – יגיע		
אדמותהה–אדמותיה		בדי – בדאי		אנו – ענו		
כשאשמע – כששמע		קולם – כולם		אלו – עלו		
קשב בידיה – כשבידיה				אברתם–עברתם		
				לשקח – לשכח		
אהיה – יהיה				אבודה – עבודה		
הצמאר – הצמער				תען – טען		
הטקלקל–התקלקל				טכבה – מקוה		
שמח – שמתה				אצטריח–אצטרך		
לאשבח – לאשתך				לסת – לתת		
ידיח – ידייך				קרא – קרה		
לעסוף – לאסוף				להביע – להביא		
				מזבדע – מזודה		
אמה – אמא				מסביו – מסביב		
אחרעי – אחראי				תיול – טיול		
זכי – זכאי				להוחיח – להוכיח		
עוזרב – עוזריו				קעשה – כעסה		
				במצו – נמצב		
				האזרה – העזרה		
				פסח – פתח		
				סיכות – שיחות		
				שמו – שמעו		
				מצה – מצא		

THE WRITTEN TEST, STUDENT B

אומות שלא אמי ועל אומיתי שלי החיל
היה רב מאוד ששמה כאת. השוא תעזן
שקנה אות הת הראשתורים כשהיה היה תולה.
והיה לפחק שבת אומן יוסף שעו אשכל
ולאו אכח אות המפיה פחק אוב לאני מכבא
שבאו אוכת ובקש לתת משני אוב הוכיח אוכן אות
מכתב אביה ביאותו ברעו נבאה מכתב
למיף ובהבל ויוסף שאו הבה עד ובק
ולמידן בואק נפק אוף השרטט. אוכף השופט
בפרו שניהק אות מה שקרה. השופט קרא
מידן להביא אות עמו ושף עמו קרא
נר עקרא שאשתה עוב תרס אליק. כף
טוק עקח מצווה כבדה והלק מסביב עשיר.
בסוס התי עוכ רבה השופט עהוחח מירמי
ומי הבדיק. בדרק בישיב הישיה עכ בשלה
אילו שאשיקרתה שאו היו עשרת בימים פה.
ענה שאובשלת מאוד שר מבקרת כק מאוד
את מצוות אותי בשורת הלבם את ריבה שמוכף
ובוק מבקרין. אובל בשבב נהנת מהענפה
שק יאוק נבנו. בן נשמו שק כן בקבר. אומר
בן אלי בקבישמית את כרמת שברואל שלי.
את אולי שדוש את אומאשכף אני אומרא שבק.
אנתא הכוף כש קיבוה המפרה בריק אשיאות
חבקה בני שיבות את האמת. אליק מקש מיינד שרוש עקו ובהבה
אוקו. הק בשו שתרקין שכ השופט. רשיהשלהוק כשקבו, כך היו הבו.
ב' ק. פ טא את הטבשיבה אוקני אוב רק בשכו מכן וסברו שכ הפיחה שאשיאלי.

Student B

Subtest I		Subtest II		Subtest III		Peculiarities	
Patterns according to rules		Function words		Stems			
stim-ulus	res-ponse	stim-ulus	res-ponse	stim-ulus	res-ponse	stim-ulus	res-ponse
מה שאני	מא	עליו	-	אליו	מצה	-	מצא	שבעה	-	צוה
עבתא	-	עבתה	פו	-	פה	כראה	-	קרא	חברה	-	חברם
אבתא	-	עבתב	לו	-	לא	בכשתי	-	בקשתי	מזיע	-	מגיע
			עבל	-	אבל	יגעה	-	יגיע	צפרו	-	ספרו
עב	-	אב	קמה	-	כמה	אברתם	-	עברתם	זוג	-	זוג
עמו	-	אמו	אכשיו	-	עכשיו	שכת	-	שקם	מצודה	-	מזודה
הבית	-	הביתה	לחן	-	לכן	אשכר	-	אשקד	מהגבפה	-	מהגבמה
תרגדיה	-	תרגדיה	לא	-	לא	אכק	-	אקח	יליך	-	ילדיך
תראקטורים	-	תרקטורים	ולם	-	אולם	מכבא	-	מקוה	עצרא	-	עזרה
תרקלין	-	תרקלין	בר	-	בא	צאק	-	צעק	כפסו	-	קפצו
להשתן	-	להתחתן	בבדי	-	בודאי	תיעול	-	מיול			
הכלכל	-	התקלקל				להוחיח	-	להוכיח			
						כעשה	-	כעסה			
אביב	-	אביו				במצו	-	במצב			
אזרב	-	עוזריו				לכץ	-	לחץ			
לבחם	-	לבכם				שמיה	-	שומע			
לחם	-	לכם				דועגת	-	דואגת			
אצתרך	-	אצטרך				מזבדה	-	מזודה			
הצמער	-	הצטער				אשיואות	-	אישיות			
להצתרף	-	להצטרף				כעבו	-	כאבו			
לאשתחה	-	לאשתך				היפי	-	עיפים			
הרמי	-	הרמאי				פסח	-	פתח			
זקי	-	זכאי				אזרים	-	עוזריו			
שקרת	-	שקרת				סיחות	-	שיחות			
לעסוף	-	לאסוף				שמאו	-	שמעו			
אושבי	-	ושבי									

THE WRITTEN TEST, STUDENT C

C

[illegible]

יוסף שרה
כי, ושוב ין שומרת קבוצה
שאתו בעוף השופט אחד שין
ויש, שלפני כמה שנים ומכרו את המגרש
ה"ו שיכים כמה. שוב בתשעים
על השופט בשלב של יום השופט שם
לך שוב שלו ושאנו אחד ? עם השופט לתביעין
תפקיד נמי, למשל שוב השופט אנחנו בדיון אחרי
שלחתה האם כשהיה נאשם בבית משפט.
שלי, קיבלתי שוב שוב שוב שוב שלנו.
קראתי בפרוטוקול של. את
כן קיבלו שומע ין, שוב שוב שוב
שוב מה שהיה ושם, לנו שהיו ין שאחרי שם
שוב קיבלו יקיים מתפלל שוב כבר לה שוב
במצב כי שוב כי בשלב מתפלל את מקרה
קה מקום שוב מקבלת שוב. בשפט שלנו שוב
כיצד לשופט יקיים מתפלל שוב כבר לה שוב
שוב מה שהיה ושם, לנו שהיו ין שאחרי שם
כן קיבלו שומע ין, שוב שוב שוב שוב
קראתי בפרוטוקול של. את
שלי, קיבלתי שוב שוב שוב שוב שלנו.
שלחתה האם כשהיה נאשם בבית משפט.
תפקיד נמי, למשל שוב השופט אנחנו בדיון אחרי
לך שוב שלו ושאנו אחד ? עם השופט לתביעין
על השופט שלנו בשלב של יום השופט שם
ה"ו שיכים כמה. שוב בתשעים
ושאנו בעוף השופט אחד שין
כי, ושוב ין שומרת קבוצה

Student C

Subtest III				Subtest II		Subtest I	
Pecularities		Stems		Function words		Patterns according to rules	
stim-uli	res-ponse	stim-uli	res-ponse	stim-uli	res-ponse	stim-uli	res-ponse
						תרגדיה	טרגדיה
זוג	- גוז	רופא	- רופה	עליו	- אליו	תרק תורים	-טרקטורים
לחץ	- לקץ	צבע	- צוה	אל	- על	תרקלין	- טרקלין
		לשכות	- לשקות	זואות	- זאת	הוצאתה	- הוצאות
		הגיעה	- הגיע	לו	- לא	דברתה	- דברת
		טען	- טעון	אכשיו	- עכשיו		
		שקט	- שקם	קת	- כף	אצמרך	- אצטרך
		מכבה	- מקוה	בודי	- בודאי	הצתאר	- הצטער
		רגה	- רגע				
		הצתאר	- הצטער			להבי	- להביא
		צאק	- צעק			להוכין	- להוכיח
		קרא	- קרה				
		מזבדה	- מזודה			רמי	- רמאי
		האיבו	- הייבו			זקי	- זכאי
		לדעוג	- לדאוג				
		כפצו	- קפצו			אמה	- אמא
		סכות	- שיחות			השעות	- אישיות
		מצה	- מצא			עוזרב	- עוזרין

Appendix F

The List of Items Suggested for Omission

THE LIST OF ITEMS SUGGESTED FOR OMISSION

Definite Article Patterns

הבא	הבחור
הבאים	הבחורים
הבאה	הבחורה
הבאות	הבחורות
הבאתי	הבחורתי

Other Patterns

אשתו	שלו
בנו	תינוק
ביתו	עץ גדול
אומץ	אמנם
הבכור	שם
שלום	טרקטורין

Stems

דבר

בלב

Appendix G

Directions for Test Administration

DIRECTIONS FOR TEST ADMINISTRATION

Students are given a blank sheet of paper and the following instructions verbatim:

> I am going to give you a spelling test in Hebrew. It is rather a long test but you won't find it very hard. There may be a few words you do not understand or others you haven't studied before, but I want you to try and spell them the best you can. This is not one of your regular spelling tests and it will not effect your spelling marks.
>
> I will read you a story. First you have to listen only. Then I will repeat the story, sentence after sentence, at such a pace that you will have enough time to write it down. If we do not finish in this session, we will continue in the next session.

During the first part, when the story is read, students can ask questions about the content and answers are given by the teacher. The story is then dictated, each sentence being repeated two times.

Following administration, each student's errors are tabulated into four columns mentioned in the paper:

1. Patterns according to rules.
2. Function words.
3. Stems.
4. Peculiar errors.

The scoring procedure was: one point scored for each word in which target pattern was correct, and zero points scored for each word in which the target pattern was incorrect. Words which included errors different from the target pattern are marked in the column, but do not effect the scoring procedure. Some words include more than one pattern, and these are scored as one point for each correct pattern and zero points for an incorrect pattern. These words are scored then in several ways. The number of correct answers is calculated, and the sum is the score for each subtest (represented by the first three columns).